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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,013	01/28/2000	Toshimitsu Kaneko	0039-7544-2TTCRD	1659

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EXAMINER

AKHAVANNIK, HUSSEIN

ART UNIT PAPER NUMBER

2621

DATE MAILED: 02/11/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/493,013

Applicant(s)

KANEKO ET AL.

Examiner

Hussein Akhavannik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-14 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1-8 and 15-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected groups I and III, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 6.

Response to Arguments

2. Applicant's arguments, see page 2, lines 12-20 of Paper No. 11, filed January 12, 2004, with respect to the rejection(s) of claim(s) 9-14 and 21-24 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hennessey et al.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-14, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer (U.S. Patent No. 5,684,715) in view of Itokawa (U.S. Patent No. 6,404,901), and further in view of Hennessey et al (U.S. Patent No. 6,014,461).

Referring to claim 9,

- i. Extracting feature data of a predetermined object and feature data of a background area from a frame of an input video is not explicitly explained by Palmer. Palmer does explain extracting feature data of a predetermined object in column 6, lines 8-29. The

attribute generator is responsible for determining characteristics of an object such as position, shape, size, and layering information for each video object. However, Palmer does not extract feature data of the background area from a frame. Itokawa illustrates extracting both the foreground area and the background area from an image input in figure 8, reference numbers 102 and 104. Itokawa further explains that the background can be extracted whether it moves or does not move in column 9, lines 21-30. The extraction of feature data from the background is explained by Itokawa in column 9, lines 42-50. In order to save spatial and temporal information about an entire frame, it would be necessary to extract both the object and the background information from a frame. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to extract feature data of a predetermined object and feature data of the background area from a frame.

ii. Describing the feature data of the predetermined object and the feature data of the background area as a descriptor of the frame, the feature data of the predetermined object including color information of an area of the predetermined object is not explicitly explained by Palmer or Itokawa. Palmer does illustrate describing the feature data of a predetermined object as a video descriptor in figure 3. Furthermore, Itokawa explains determining the feature data of a background area of a frame corresponding to part i of this claim. However, the system of Palmer and Itokawa does not include color information as feature data of a predetermined object. Hennessey et al illustrate extracting and saving color range information in order to identify an extracted object in figure 2, reference numbers 207 and 208. By determining the color ranges of an object

and storing it in the object descriptor of Palmer and Itokawa, an object is better defined and able to be tracked more accurately throughout a series of frames. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to describe the feature data of the predetermined object, including color information of an area of the predetermined object, and the feature data of the background area as a descriptor of the frame so that complete feature data about an entire frame of video is recorded and object tracking is performed more accurately.

iii. Attaching the descriptor to the frame is illustrated by Palmer in figure 3, as the video object descriptor 60 corresponds to object 64 of frame 51.

Referring to claim 10, describing a difference between the feature data of the predetermined object and the feature data of the background area as the descriptor is not explicitly explained by Palmer. However, Itokawa explains in column 9, lines 6-30 that the background data and the foreground data are separated, thereby describing the difference between the feature data and the background data. Itokawa further illustrates in figure 26, illustrates the difference between the background motion vectors (601) and the object motion vectors. In order to separate a predetermined object from the background area of a frame, it would be necessary to determine a difference between a feature of the object and the background. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to describe a difference between the feature data of a predetermined object and the feature data of the background area.

Referring to claim 11,

- i. The feature data of the predetermined object including at least position, outward form or size, and moving information of the object is explained by Palmer in column 4, lines 51-59 and column 5, lines 7-11. The descriptor is explained to include spatial information including the position and size of each object and the temporal information includes action information that specifies movement of the object.
- ii. The feature data of the background area including at least the moving information of the background area is not explicitly explained by Palmer. However, Itokawa explain that a background area may be moving and that the background movement maybe be calculated as the motion value vector, V_b in column 9, lines 21-30 and illustrated in figure 11. In order to save information of an entire frame when the background is moving, as suggested by Itokawa, it would be necessary to extract both the moving information of the object and the moving information of the background. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the moving information of the background in the feature data of the background.

Referring to claim 12, the descriptor including:

- i. A frame number is illustrated by Palmer in figure 4, as each frame has its own corresponding frame ID.
- ii. A pointer to a next descriptor is explained by Palmer in column 5, lines 7-11. The action information in the descriptors will allow the computer to jump from one frame sequence to another frame sequence, which also would contain a descriptor.
- iii. The feature data of the background area corresponds to claim 11.

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iv. The feature data of each object in the frame is explained by Palmer in column 5, lines 12-26. Palmer explains that there will be a separate video descriptor for each of the objects in the frames.

Referring to claim 13, the descriptor being created from a corresponding frame at an interval of a predetermined number of frames in the input video is explained by Palmer in column 6, lines 23-29 and illustrated in figure 4. The interval of frames in the input video is one.

Referring to claim 14, this claim includes all the limitations of claim 14, but is performed on a computer readable medium. Palmer illustrates a computer readable medium capable of performing the method of claim 9 in figure 2 as Disk (15).

Referring to claims 21 and 23, the feature data of the predetermined object including at least one of a moving vector and an affine transformation coefficient is illustrated by Palmer in figure 3 by the action and the action parameters of the video object descriptor (60), respectively. Palmer explains in column 6, lines 63-66 that the object tracking unit creates a history of objects and how they move through successive frames, corresponding to the claimed moving vector. Palmer then explains that the output from the generator (70 of figure 4, which includes the object tracking unit, 72) is stored as a video object descriptor in column 7, lines 5-9. The action parameters and size, which are stored by Palmer in the video object descriptor, correspond to the claimed affine transformation coefficient.

5. Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer in view of Itokawa, in view of Hennessey et al, and further in view of Chen (U.S. Patent No. 6,278,466).

Referring to claims 22 and 24,

i. The feature data of the background including at least one of color information is not explicitly explained by Palmer or Itokawa. However, Hennessey et al illustrate using the color range of an object in order to identify an object, corresponding to claims 1 and 14. Color information, as determined by Hennessey et al, can also be saved in the video descriptor of Palmer and Itokawa in order to describe an entire frame of video.

Furthermore, by saving the color information of an object and a background, the frame is more accurately described, leading to more accurate object tracking at the cost of computation power. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include color information as feature data of a background in order to track an object through video more accurately.

ii. The feature data of the background including at least one of camera-work information describing an operation of a camera used for the input video is not explicitly explained by Palmer or Itokawa or Hennessey et al. However, Chen explains a text descriptor of background frame data including text descriptions of "Camera Still", "Camera Pan", and "Camera Zoom" in column 22, line 64 to column 23, line 15. By including camera-work information in a video object descriptor, the background motion will be better defined in the system of Palmer, Itokawa, and Hennessey et al. It would have been an obvious matter of design choice to modify the video object descriptor of Palmer, Itokawa, and Hennessey et al to include camera-work information, since the Applicant has not disclosed that having camera-work information solves any stated problem or is of any particular purpose. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include camera-work

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information in the video object descriptor so that the background motion of the video sequence is more accurately described.

Conclusion

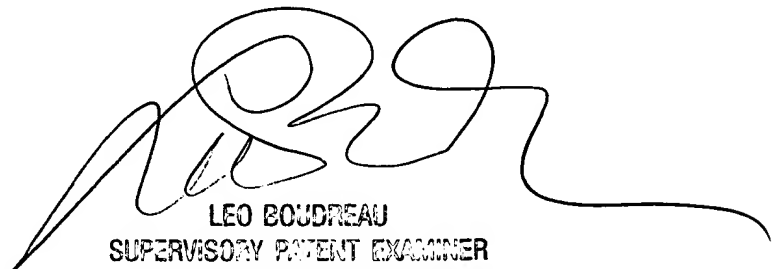
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hussein Akhavannik whose telephone number is (703)306-4049. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on (703)305-4706. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Hussein Akhavannik
January 28, 2004

H.A.



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